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**FIELD OVERSIGHT SUMMARY REPORT**

**ACS NPL SITE**

**GRIFFITH, INDIANA**

**November 22, 1996 - December 27, 1996**

# Letter of Transmittal

## BLACK & VEATCH Special Projects Corp.

101 North Wacker Drive, Suite 1100, Chicago, Illinois 60606, Phone (312) 346-3775, Fax (312) 346-4781

To: Ms Sheri Bianchin  
United States Environmental Protection Agency  
77 West Jackson Blvd. (SRW-6J)  
Chicago, Illinois 60604

Date: March 6, 1997  
From: Ashok Rupani  
Project: American Chemical Services  
Project No.: 71670  
File: E.1

We are sending you:

☒ Attached ☐ Under separate cover via \_\_\_\_\_

☐ Preliminary Report

☐ Specifications

☐ Final Report

☐ Change Order

☒ Other Oversight Summary Report

☐ Addendum

These items are transmitted:

☐ As requested

☒ For your information

☐ For your approval

☐ For review and comment

Remarks: Enclosed is oversight summary report for the field activities conducted during the period November 22, 1996 through December 27, 1997. During this period, following activities were performed by Montgomery Watson:

- Drilling of soil borings along the approved PGCS extraction trench alignment;
- Installation and sampling of two new monitoring well nests, MW52/53 and MW54/55;
- Independent outfall/surface water sampling by BVSPC.

If you have any questions, please call me at 312/683-7822.

American Chemical Services  
Work Assignment 80-5PJ7

Copy To: P. Hendrixson, USEPA (w/o enclosures)  
E. Howard, USEPA (w/o enclosures)  
Steve Mikvich, BVSPC (w/enclosures)

Signed: \_\_\_\_\_

3-11-97

# USEPA/ARCS V BVSPC Field Oversight Summary

Reporting Period: November 22 - December 27, 1996

BVSPC Project No. 71670

Site Name/Location: ACS, Griffith, IN

Hours Worked: 95

USEPA Work Assignment Manager: Sheri Bianchin

Project Coordinator: Steve Mrkvicka

Personnel Summary Affiliation	No. of Personnel	Responsibility
Dave Pieczynski Montgomery-Watson Addison, Illinois	1	Field Sampling Personnel
Jeff Ramsby Montgomery-Watson Madison, Wisconsin	1	Field Sampling Personnel
Keith Schilling Montgomery-Watson Des Moines, Iowa	1	Field Sampling Personnel
Horizontal Technologies Lake Alfred, Florida (HTI)	1	Soil Borings along the PGCS extraction trench alignment
Fox Drilling Co (Fox)	2	Soil Borings along the PGCS extraction trench alignment
Layne-Western Co. (Layne)	2	Monitoring Well Installation
Ashok Rupani, Matt Booher Black & Veatch Special Projects Corp. Chicago, Illinois (BVSPC)	2	Field Sampling Personnel, USEPA Oversight Contractor

**Summary of field activities:** A number of field activities were undertaken by Montgomery-Watson, the PRP Contractor, and its subcontractors during this reporting period. On November 26-27, 1996, HTI drilled several soil borings along the PGCS extraction trench alignment to verify the top of upper confining layer. From December 16, 1996, through December 27, 1996, Montgomery-Watson installed, developed and sampled two new well nests within the lower aquifer, MW-52/53 and MW-54/55. BVSPC collected split samples from all four new wells. On December 27, 1996, BVSPC collected a surface water sample from the stream located just north of the Griffith Landfill.

#### Soil Borings along the PGCS Extraction Trench Alignment

In preparation for the construction of PGCS extraction trench, HTI advanced several soil borings along the approved trench alignment. The objective of these soil borings was to confirm the depth to the top of upper confining layer. The drilling was conducted by Fox Drilling Company, HTI's subcontractor.

Soil borings were advanced using a solid-stemmed auger mounted on an all-terrain vehicle (ATV) drill rig. BVSPC designated the borings as SB-1, SB-2, and so forth beginning at the south end of the trench alignment. The borings were advanced approximately 100 feet apart. During drilling activities, HTI conducted air monitoring with an HNu meter. Vertical profile of the top of upper confining layer as indicated by the soil borings is shown below.

<u>Soil Boring Designation</u>	<u>Depth to Top of Upper Confining Layer (feet)</u>
SB-1	13.0
SB-2	13.0
SB-3	12.0
SB-4	13.0
SB-5	12.5
SB-6	12.0
SB-7	13.0
SB-8	13.0
SB-9	13.0
SB-10	11.5
SB-11	13.5
SB-12	13.0
SB-13	13.0
SB-14	15.0

At locations SB-1 (north end of the trench alignment) and SB-8 (near monitoring well MW-10C), the upper confining layer was penetrated through and was found to be seven (7) feet and two (2) feet thick, respectively.

Much of the soil cuttings generated during the drilling activities were placed back in the borings and the remaining soil cuttings were left near the borings to be handled after the PGCS extraction trench was completed. The augers were decontaminated prior to and at the end of the drilling activities.

Copy of BVSPC field notes and photographs of drilling activities are attached.

#### Monitoring Well Installation

On December 16, 1996, Montgomery-Watson and its drilling subcontractor, Layne-Western Company mobilized to the site for the installation of two new monitoring well nests, MW-52/53 and MW-54/55, within the lower aquifer. In response to Respondents' *Revised Lower Aquifer Technical Memorandum* dated September 1996, the USEPA, in an October 11, 1996, letter, required the Respondents to install these two new well nests as part of the lower aquifer monitoring network in addition to the wells proposed to be installed by the Respondents. In the October 11, 1996, letter, the USEPA required one well nest (MW-52/53) to be located between existing monitoring wells MW-24 and MW-10, and the other well nest (MW-54/55) to be located between existing monitoring wells MW-10 and MW-8. In each nest, the shallow well was to be screened at the top of the lower aquifer, whereas the deep well was to be screened at the bottom of the lower aquifer. In a November 6, 1996, letter to the USEPA, the Respondents agreed to install the new well nests. The well nests were located in the field on December 11, 1996, by Montgomery Watson in the presence of BVSPC personnel. The shallow well MW-52 was located approximately 20 feet south-east of MW-53; the other shallow well MW-54 was located approximately 10 feet south-west of MW-55.

Well installation activities were to follow the Revised SOP for Lower Aquifer Well Installation, December 10, 1996, and subsequent revision dated December 20, 1996. The wells were installed by Layne under the supervision of Montgomery-Watson's field geologist/hydrogeologist. Following a health & safety briefing, the drilling crew began work at the deep well MW-55. A second drilling crew was mobilized to the site on December 17, 1996, which began work at the other deep well MW-53.

At each of the deep well locations, the boring was advanced by blind drilling to approximately 10 feet below ground surface (bgs) using 10-inch ID hollow stem augers. Continuous split-spoon samples were then collected until the top of upper confining layer was confirmed. At MW-53 and MW-55, the top of clay was encountered at depths

approximately 13 feet bgs and 14 feet bgs, and the 6-inch stainless steel outer casing was set at 14.5 feet bgs and 15 feet bgs, respectively. At each of the shallow well locations, MW-52 and MW-54, the borings were advanced by blind drilling to approximately 1 to 2 feet into the upper clay layer. After the 6-inch outer casing was installed, the annular space between the boring and the casing was grouted using cement/bentonite slurry as the 10-inch hollow stem augers were slowly pulled back. The slurry was placed using a tremie pipe.

Following installation of the surface casing, the monitoring wells were installed using rotary wash drilling technique which advanced 5-foot sections of a temporary 4-inch ID, threaded, stainless steel casing inside of the 6-inch outer casing. The leading section of the 4-inch casing was equipped with a 5-inch OD drill bit to advance the casing and a 3.5-inch tri-cone drill bit inside the 4-inch casing to keep cuttings from entering the casing.

Approximately 18 to 24 hours after setting the outer casing, drilling through the upper clay layer began. The borings were advanced by using only potable water. The potable water was obtained from the City of Griffith water main located at the Griffith Landfill. At MW-54/55 location, the upper clay layer was approximately 11 feet thick; at MW-52/53 location, the upper clay layer was approximately 3 feet thick.

At deep well locations, the drilling continued below the upper clay layer by using only potable water. As the drilling progressed into the lower aquifer, a small amount of bentonite was added to the drilling fluid (e.g. 150 lbs of bentonite to 220 gallons of water) to aid in lubrication and minimize the heaving potential. Below the depth of 50 feet, a thicker drilling fluid was used by continuously adding more bentonite with increasing depth. An initial attempt to avoid using thicker drilling fluid resulted in heaving sands, thus requiring approximately 30 feet of re-drilling. Drilling fluid was used until the boring was advanced to the lower clay layer. The 4-inch casing was pushed into the lower clay layer so that the drilling fluid could be flushed out of the boring as much as possible. Flushing continued until clear water was observed. Based on an estimation by Watson's field personnel, approximately 50 gallons of drilling fluid was lost during drilling activities at each of the deep well locations. Montgomery-Watson's field personnel indicated that much of the lost drilling fluid would be recovered during well development. Wells MW-53 and MW-55 were set at approximately 86 feet bgs and 97.3 feet bgs, respectively.

At shallow well locations, the drilling continued below the upper clay layer by using only potable water. The wells were overdrilled by a couple of feet to facilitate well

installation. Wells MW-52 and MW-54 were set at approximately 27 feet bgs and 37 feet bgs, respectively.

At each of the well locations, once the desired depth was reached, the 4-inch temporary casing served to keep the boring open and allowed the well installation to occur inside the casing. The temporary casing was slowly retracted during installation of filter pack, fine sand seal and annular space seal in accordance with the SOP. The wells were constructed of 2-inch stainless steel screen and risers. Filter pack extended from bottom of the screen to 2 feet above the top of the screen. Approximately three-foot thick layer of fine sand was then placed as a filter pack seal. The annular space seal consisting of thick bentonite slurry was placed above the fine sand. The bentonite slurry was pumped from the bottom up using a tremie pipe. The top of the bentonite slurry was established at least 5 feet below ground surface. Field personnel periodically used down-hole tape measure to check for bridging and to verify the depths of various well materials. During the drilling activities, Montgomery-Watson's field personnel used an HNu meter to monitor borehole vapors and periodically screen the soil cuttings.

After a minimum of 12 hours of bentonite slurry placement, ground surface seal was constructed at each well location. The ground surface seal consisted of a stick-up steel protective pipe installed on top of the annular space seal.

In general, well installation activities were conducted in accordance with the SOP. Copy of BVSPC field notes and photographs of well installation activities are attached.

#### Monitoring Well Development

Monitoring wells were developed at least 24 hours after well installation activities were completed. In general, the SOPs included in the August 1995 Quality Assurance Project Plan (QAPP) were followed. A Grundfos pump was used for well development. During well development, the pump location inside the well was constantly varied along the screened depth. This method facilitated suspension of the well sediments and hence, reduced the development time.

Prior to initiating development procedures, static water level and total well depth was measured at each well location. The difference yielded the length of the water column which was then used to calculate both the well volume and the sand pack volume. Field measurements for temperature, pH, turbidity and specific conductivity were taken after each well volume.

After at least three sets of measurements indicated that the parameters were stabilized within 10 percent of the previous set of measurements, well development was deemed complete.

### Monitoring Well Sampling

Sampling of the two new monitoring well nests was conducted on December 26-27, 1996, in accordance with the revised SOP dated March 8, 1996. The October 30, 1996 letter to the respondents also provided an SOP clarification which permitted respondents to use deionized water for decontamination purposes and field blank preparation. All samples were to be analyzed for full-scan analytes (TCL/TAL).

Purging and sampling was conducted using a low-flow Grundfos submersible pump. The pumping rate was maintained at or near 300 ml/minute. Field measurements for temperature, pH, turbidity and specific conductivity were taken during purging. Sampling was initiated when the field parameters stabilized for three consecutive readings within 10 percent of the previous readings. Sample handling and chain-of-custody procedures were followed in accordance with the SOP.

BVSPC collected split samples at all four wells. BVSPC also collected a field duplicate at MW-55, an equipment blank sample, and a total of three (3) trip blanks. BVSPC submitted all samples for full-scan organic analyses to the CLP laboratory, Mitkem Corporation in Warwick, Rhode Island. BVSPC submitted all samples for full-scan inorganic analyses to the Central Regional Laboratory in Chicago, Illinois. The sample handling and chain-of-custody procedures were followed in accordance with the Revised Mini-Quality Assurance Project Plan, Revision 3, January 14, 1997, prepared by BVSPC. BVSPC collected only unfiltered samples for inorganic analyses, whereas, Montgomery-Watson collected both, filtered and unfiltered, samples for inorganic analyses.

Copies of BVSPC field notes and photographs of field sampling activities are attached.

### Surface Water Sampling

At the direction of USEPA WAM, Ms Sheri Bianchin, BVSPC conducted independent sampling of the outfall that drains surface water from the Griffith Landfill property to a 15-foot wide stream. This stream is located immediately north of the Griffith Landfill, and south of the railroad tracks and the wetlands. The objective of this sampling was to evaluate the impact on the stream due to the surface water from the Griffith Landfill property.

The surface water sample was collected directly downstream and as close as practically and safely possible to the outfall discharge. A duplicate sample was also collected at this location in accordance with the QA/QC requirements. Since no additional sampling tools other than the sample containers were used, an equipment

blank sample was not collected. Sampling, sample handling and chain-of-custody procedures were followed as outlined in the Amendment 1 of the Revised Mini-Quality Assurance Project Plan, Revision 3, January 14, 1997, prepared by BVSPC. These samples were submitted for full-scan (TCL/TAL) analyses. Photograph of the sampling location is attached.

#### **Field Investigation-Derived Wastes**

Except for MW-54/MW-55 well nest, all soil cuttings generated from drilling through the upper saturated zone were placed in a Department of Transportation (DOT) approved 55-gallon drums. Decontamination water, drilling fluids, development water and purge water generated from all four wells were also containerized. All drums were temporarily staged near the well locations.

#### **Problems Encountered/Corrective Actions:**

Following modifications to the SOP were made based on field conditions. These modifications were approved by the USEPA and are reflected in the revised SOP dated December 20, 1996.

- The SOP was modified to allow the use of thicker drilling fluid on an as required basis. An initial attempt to avoid using thicker drilling fluid resulted in heaving sands, thus requiring approximately 30 feet of re-drilling;
- The SOP was modified to allow use of three feet of fine sand as filter pack seal. The original SOP called for bentonite pellets which have potential of causing bridging given a relatively small clearance between the temporary and permanent well casings.

Due to extremely cold weather conditions, the drilling crew experienced a number of problems with drilling tools/equipment. At both the shallow well locations, the monitoring well casing was accidentally pulled out while pulling out the augers during filter pack placement. In such situations, the well casing was pulled out completely and was reset after re-drilling the boring to the desired depth.

#### **Future Work Schedule:**

Following intrusive activities are planned for the months of January and February, 1997:

- Installation of PGCS extraction piping and sumps;

- Installation of PGCS conveyance piping (2-inch influent line, two 1-inch electrical conduit lines);
- Construction of barrier wall;
- Installation of barrier wall extraction piping and sumps;
- Installation of barrier wall conveyance piping (1-inch air line and 2-inch influent line);
- Installation of effluent discharge system;
- Construction of 4-inch potable water line from within the ACS plant to the treatment building;
- Abandonment of six (6) ACS production wells.

Following sampling activities are planned for the months of January and February, 1997:

- Second Quarterly sampling of lower and upper aquifer wells;
- Sampling of the four Griffith Landfill Wells, M-1S, M-2S, M-4S and M-4D;
- Independent sampling of the ACS production well ATMW-4D

**Comments:**

At the time of writing of this report, following tasks remain to be completed by Montgomery-Watson:

- The soil cuttings generated from drilling through the upper saturated zone at well locations MW-54/MW-55 should be placed in drums. The soil cuttings were left in place near the wells;
- The new monitoring wells should be permanently labelled as soon as possible.

Signature:  Date: 3-11-97

Ashok Pufani  
11-25-96

0810 On site

Weather: Partly sunny; 15°F,  
wind chill -8°F

Today HTI is scheduled to conduct soil borings along PGCS extraction trench alignment to verify clay depth.

0825 Health & Safety briefing by Montgomery Watson's Lee is in progress inside the trailer. Fox Drilling will conduct drilling activities for HTI. Lee is concerned that drillers have no tyvecs and HTI has unsatisfactory air monitoring plan. Lee said he is going to discuss this further with HTI. Lee indicated no work will begin until he is satisfied with their monitoring plan.

0840 Ben said he is not happy with the way HTI has approached this phase of the work. They are going to have a conference call shortly to figure out what

Ashok Pufani  
11-25-96

139-

can be done about air monitoring issue.

0940 Lee said based on their discussions it has been decided that HTI/Fox will bring in a PID from H&G Co. in Merrillville, IN. so it will be another hour before they can get started.

1030 Lee said they are going to let HTI/Fox use their own HNU instead.

1045 Getting set up near the south end of the trench.

1130 #1 Wetlands area cleared for installation of conveyance piping / discharge system (facing west) ~~with~~ <sup>AKR</sup> #12

1135 Fox crew indicated until HTI personnel is ~~made~~ <sup>AKR</sup> available, they cannot really start drilling. So take an early lunch.

1140 Break for lunch

1220 Back to the site trailer

1245 Still waiting for HTI to show up at the trailer, <sup>AKR</sup>

1340 Begin drilling at the south end of the trench. Will designate

boreholes as SB-1, etc. for field notes purpose.

140

Ashok Puri  
11-26-96

- #2 1345 Drilling at SB-1 (facing north)  
HTI plans to drill every 100 ft or so.  
13' to top of clay at SB-1

Time	Booring NO.	Depth to clay
1350	SB-1	13'
1405	SB-2	13'
1420	SB-3	12'

- #3 Drilling with solid stem auger @ SB-3 (facing north)  
HTI is conducting air mon. using WITH HNU.  
Soil cuttings are being partially backfilled in the borehole and remaining left at the boring location.

1435	SB-4	13'
1450	SB-5	12.5'

- #4 Air monitoring at SB-5

1510	SB-6	12'
1530	SB-7	13'
1540	SB-8	13'

Ashok Puri  
11-26-96

141

- #5 Drilling at SB-8 (facing NW)  
Drillers indicated that they drilled through the clay layer at SB-1 and that it was approx. 7' thick. At SB-8, however, clay layer appeared to be only about 2' thick. SB-8 is located near NW-10C.

1600 Called Steve & gave him an update.

1605 Called Sheri & informed her about shallow thickness of clay at SB-8.  
1620 off site. Will continue drilling tomorrow.

end

142

Shok Enpuri

11-27-76

0755 On site

Weather: Partly cloudy; 15°F  
wind chill -2°F

0805 Drillers on site. HTI on site  
will continue to do soil borings  
along PGCS trench.

Time	Boring NO.	Depth to clay
0820	SB-9	13'
0840	SB-10	11.5'
0850	SB-11	13.5'
0900	SB-12	13'
0905	SB-13	13'
0915	SB-14	15'

Except SB-8, clay was not  
penetrated through at any  
location.

Discuss with Ben about PGCS  
trench construction. He said  
water should not be problem.  
He said the truck crossing will  
be constructed the week of  
12/9.

Shok Enpuri

11-27-76

143

Asked Ben if he had any idea  
on the frequency of pumping at the  
landfill. He said no.

0930 All borings completed. The augers  
were decomed yesterday prior to  
start of work and will be  
decomed now prior to drillers  
leaving the site. Augers were  
not decomed between boring  
locations.

0950 off site

end

Joshua E. Pami  
12-3-96

0830 on site

weather: Rain/snow, 32°F,  
windy.

Talked with Ben. He said he could not call me yesterday to give an update. He said Young's Env. & HTI would not be able to work onsite until certain union issues are worked out. He said they got picketed yesterday by union. Ben said Andy of HTI is going to be in shortly to discuss all of the issues. Ben indicated Pete Vagt's called ~~AKR~~ will be in shortly regarding monitoring well installations next week. Ben said if I can be around a few more minutes he can give me an update on scheduling.

915 Ben took me over to the HTI warehouse where drawing of polymill is going to be

Joshua E. Pami  
12-3-96

completed. He introduced me to Andy of HTI.

1000 off site

env-f

176

Ashwell Enigma  
12-11-96

0940

on site

1003

Date of miv on site live are going

to locate new well nests MW52/53

+ MW54/55 to be installed in

the lower aquifer.

Dave showed me the maps when

locations were marked and agreed

upon during yesterday's conference

call. MW52/53 well was located

between MW24 and MW10 and

approx 50-70' north of pigpen

P. 70 &amp; P. 71. MW54/55 well nest was

located between MW10 and MW08

about 50' south of MW49.

Dave told me that he wanted

the two locations incorrectly

at south the well. Dave is

mess for Jeff. Family who is

going to be old here for

handing

1100

Back to the trader Askeap

Ben if it was ok to do it

on the weekly construction

meetings. He had five.

Ben indicated at two point

small

1125 Back to the office.

He does not know where the fields  
and between well and lake region.of Note & Inform  
12-11-96

147

148

Ashok Rupani  
12-16-96

0830

on site

Weather: 30°F, Partly Cloudy, cold

Today MW is going to begin installation of two new lower aquifer well nests MWS2/53, & MWS4/55. MWS2/53 is located approx. midway between MW24 and MW10; MWS4/55 is located approx. midway between MW10 and MW08.

0845

Dave of MW on site to send Wayne (Drillers) is going to have only one rig today. Second rig will be here tomorrow. Jeff from MW's Madison office is also here.

0910

Drillers on site. Dave & Jeff showed the drilling locations to the drillers.

0930

Drillers unloading supplies

1040

Drilling at MWS4/55

1120

Sumo leaves mass encampment

1125

Took a split spoon sample at 13 ft. (very hard)

Ashok Rupani  
12-16-96

149

14'

is well for the casing at 15'. Began cleaning the hole.

#6

Drilling / sampling at MWS4/55 (looking north at 50)

1140

Drillers move on to drilling the 6" casing. The casing is a 20' section so it will be cut to 17' length.

1220

Break for lunch

1300

Back to the site.

1330

Drillers are moving grout materials to the well location.

1345

Begin mixing grout

1350

Set the casing at 15' and begin grouting

#7

Grouting the hole (looking east)

1430

Finish grouting the hole. Set up at the other well location.

1440

Begin drilling at the other well location approx. 10' south.

Jonokupani  
12-11-96

1505 Begin setting the 6" casing  
at 15'

#8 Setting the casing (looking  
south east)

1510 Begin mixing the grout (5%  
bentonite)

1540 Complete the pouring

1555 off site

End.

Jonokupani  
12-17-96

0750 On site

Weather: 32°F. Partly cloudy.

0810 Drillers are setting up at MW 5/55  
to drill in the clay and lower  
aquifer. Jeff told me second sig.  
is on site and they will begin  
installing the casing at MW 52/53.

0825 Jeff said it's going to be another  
half-hour before they get going.

0840 I notice HTI has brought PGCS  
construction materials on site.  
Lee of MW indicated that PGCS  
construction might begin this  
week.

0900 While setting the casing yesterday,  
water was encountered 7 to 8'  
below ground surface.

0930 Begin drilling MW 55 (deep well)

#9 Drilling in the top clay. Use the  
rotary method in casing used  
(looking east)

1015 Drill through the clay (11')

1020 Begin setting up for the 4"  
casing

152

Josh Ruffini  
12-11-96

1030 Drillers back to get some water  
The other guy is still not set up  
at MW 53.

1100 Fixed the next creek sampling  
schedule to be after Strickett.

1115 Go back to the MW 55 location.  
They are still setting up to  
install the casing.

1215 Break for lunch.

1255 Back from lunch.

Drillers are just starting  
to set up the 4" casing.

1335 Setting the 4" casing at MW 55  
#10 (looking east)

1430 Drill down to 45'. The

PID readings were up to 0.3 ppm  
from the soil cuttings.

1445 Talked to Lee about what else  
is going on today. He said  
Young's Environmental will be  
out today to lay down the  
piping from BW extraction  
trenches to the treatment  
building.

Josh Ruffini  
12-17-96

153

1515 Drill down to 50' at MW 55.  
#11 Mixing light mud for drilling  
(east - southeast)

Approx 2-50 lb of bentonite used  
with 220 gallons of water  
for drilling mud. Mud has  
been used since the top of the  
lower aquifer.

1600 Continue drilling at MW 55.

1605 Casing has been installed at  
MW 53. Currently, grouting is  
going on MW 53.

1615 Stop for the day at 58'

1630 Off site.

end

154

Shook Pipe and  
12-18-76

0830 on site

Weather: 12°F, PARTLY SUNNY

WINDCHILL -20°F

Drillers are not ready yet.  
Everything is froze up.They are going to continue  
to grout MWS3. 1' layer was  
encountered at 13.0' and  
6" casing was set at 14.5'  
below ground at MWS3.0840 Jeff said it will be few  
more minutes before they can  
get started.1030 Both drill crews are still struggling  
to get going.1035 Drillers at MWS5 about to get  
started.At least 10 feet of casing occurred  
overnight. will have to drill  
to 58'.

1215 Break for lunch

1310 Back to the site.

1330 Go over to MWS5. Drillers are at  
61' below ground. Dave indicated  
that they will add more bentoniteShook Pipe and  
12-18-76

155

to the mud as they go deeper in  
order to prevent heaving. The addition  
of bentonite will be on an as needed  
basis. They will stop using the  
mud at 80'.1350 Go over to MWS2. Drillers are  
having lot of problems. They are  
close to completing grouting at  
MWS2.#12 Pulling the augers out while  
grouting at MWS2 (looking west)

1410 Go back to MWS5

Dave asked me if SOP has anything  
regarding containerizing soil cuttings.  
I will check and let Dave know.1435 Ben stopped by and said Young's  
Environmental is going to begin  
installation of conveyance piping for  
Boxer wall Extraction Trenches.

1440 At MWS5, drilled down to 77'.

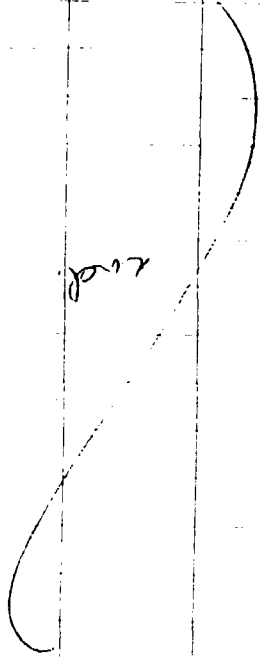
Negligible PID readings noted so  
far from soil cuttings at 10' intervals  
collected so far.1540 Drillers are down to 78' and will  
change over to pit the water at MWS5

Frank Johnson  
12-18-96

1545 Donnie says they are going to stop for the day - Donnie is doing at MWS has been sampled.

1600 Go over to OFCA to check on Young's environmental. They are going to put long down the pipe today and begin installation tomorrow.

1630 off site



Frank Johnson  
12-19-96

0815 on site  
Weather 3°F, moderate - 20°F sunny

Donnie's car still leaving out after equipment.

0840 collected site and discussed

drum cores + surface water

ASL well sampling, split sampling etc.

0855 Donnie are getting ready to start.

0930 Donnie return to 95'

0935 Drillers say they are not able to

go any further water just the water

was coming in thick mud out of

bottom hole occurred. Only the

one of mud can occur this situation.

Donnie indicated they can finish

most of the mud out just as soon

as the testing is set. Don said

separating mud could be out during

development.

1025 Donnie then sent left a message

1045 discussed with site on the phone

and Peter Velt of MW.

Shank Super  
12-19-96

Following discussion, it was agreed upon that mud will be used as necessary. All mud will be flushed out as soon as well screen is set. Remaining mud can be taken out during the development.

I requested Peter to fax the revised SOP reflecting these changes. Peter agreed.

1120 Dave said they are going to use drill bit to take the sand out and mix up the mud. (MW55)

1135 Drillers will go for water and then break for lunch.

1150 Break for lunch

1220 Back to the site

1430 Drillers finish drilling to clay at 97'. Begin flushing the hole. A lighter mud (150 lb bag for 100 gallons of water) was used to drill the last 15' or so.

Shank Super  
12-19-96

1515 Drillers go to get some more water before setting the casing. Drillers over at MW52 have installed the 6" casing and are grouting the annular space. They will set up to begin drilling the deep well MW53 starting tomorrow.

1600 Flush the hole at MW55.

Approx. 50 gallons of mud was lost. Approx. 175 gallons of potable water was used to flush the hole.

1625 Installing the stainless steel #13 casing at MW55 (looking east). Well screen set at 91' 4" bgs.

1650 Placing filter pack (SSS 10-20 #14 silica sand). (looking east)

Dave indicated they would probably just finish the filter pack and call it a day.

1655 Ben over at the trailer told me that Young's was not able to install the conveyance because of extreme cold weather. He said Young's would come back later.

160

John Eupani  
12-19-96

and excavate down to 4 feet,  
place some bedding material  
and use some of the excavated  
soil as backfill. The excavated  
soils would be managed per  
SM Plan.

1715 off site

wd.

Shook Ruffini  
12-20-46

0815 On site

Weather 3°F, wind chill -12°F  
Sunny

Drillers are getting ready to start well installation activities.

Jeff told me yesterday they worked longer and finished grouting the MW 51. Surface compact work will be done later.

0845 Drillers are setting up to drill at MW 54. Jeff and Keith from Des Moines office of MW will replace Dave today.

0850 The other crew at MW 52/53 is not ready to drill yet. They are having difficulty in getting their equipment ready to go.

0915 Drillers go offsite to get water and additional drums.

1015 Getting ready to drill through upper confining layer at MW 54.

1050 Begin drilling at MW 54.

1130 Move over to MW 52/53. They are getting ready to drill through upper confining layer at MW 53.

John K. Rupani  
12-20-16

(1)

2

- 1250 Break for lunch  
1330 Back to the site  
1350 Down to 33' at MWS4. Hole  
was pushed up to 25' due  
to leave. so try to redrill.  
1445 Drilled down to 35' log.  
Will eventually be down to 37'  
before setting the case.  
1515 Continue to drill and flush  
the water within the  
lower aquifer.  
#15 Drilling at MWS4<sup>1112</sup> within  
the lower aquifer inside the  
4" casing (looking east - north-  
east)  
1630 Set the well screen at 37'  
log. Will begin placing  
filter pack, sand and  
bentonite slurry at MWS4  
1720 off site

end

John K. Rupani  
12-21-16

1120 on site

Weather: sunny, 32°F,  
windchill +2°F

The rigs are set up at MWS2  
and MWS3

At MWS3, the drilling is down  
to 42' log. The clay was only  
3' thick at this location.

Drilling at MWS2 has not begun  
yet. The clay was encountered  
at 12' log at this location.

H11 is getting set up at north  
end of the P1015 trench. No  
borehole has been done so far.

1135 Called Steve and gave her an  
update.

1150 Wells MWS4 and MWS2 have been  
completed except surface comple-  
tion.

1200 Break for lunch

1230 Back to the site.

122 At MWS3, drilled down to 55'  
log. Still drilling through clay  
at MWS3

Shook ~~up~~ pan  
12-21-96

4

- 1325 #16 Drilling at SS' at MWS<sub>3</sub>  
(looking north-northwest)  
At MWS<sub>4</sub>, filter sand was  
placed to 25.1' and fine sand  
was placed to 21.11".
- 1400 At MWS<sub>3</sub>, down to 27' where vel-  
ocity set (Clay was encoun-  
tered from 12' to 15' lgs.  
No mud was used in the  
aquifer zone.
- 1430 Drill down to 70' at MWS<sub>3</sub>  
using the mud after 50' lgs.
- 1515 Placing filter pack at MWS<sub>3</sub>  
Drilled down to 85' at MWS<sub>3</sub>.
- 1535 Clay encountered at 85' lgs  
at MWS<sub>3</sub>.
- 1545 #17 Placing filter pack at MWS<sub>3</sub>  
(looking east-southeast) AKF
- 1550 While placing filter pack,  
the heavy caused the well  
casing to come up 3' so will  
take out the ~~the~~ <sup>up</sup> well casing  
and re-drill to 27'.

Shook ~~up~~ pan  
12-21-96

5

- 1600 It seems like HTI did not  
do any trenching today. They  
have set up all equipment at the  
north end of PGCS bench and pro-  
bably begin on 12/30/96.
- 1615 Rent the well casing and  
begin placing filter pack at  
MWS<sub>3</sub>. will stop for the day  
after placing the fine sand.  
Will crew at MWS<sub>3</sub> with HSP  
for the day after flushing the  
hole with potable water.  
Will begin installing the well  
casing tomorrow.
- 1655 off site

end

Joshua R. Parnell  
12-22-96

6

1030 On site

Weather Partly cloudy, 35°F

Jeff and Keith are setting up equipment at MW5 for development activities.

One drill crew is getting ready to leave. The other crew is installing well at MW53 location. Grouting at these two locations will be done at the same time.

1045 # Placing filter pack in MW52/18 (looking west)

1120 Developing MW54.

1230 Complete placing filter pack to 74' at MW53. Drillers said they miscounted while drilling the bottom of the clay and the well screen is at 86' bgs.

1245 Begin placing the final sand on top of filter pack.

1250 #15 Developing MW55 (looking northeast)

Joshua R. Parnell  
12-22-96

7

1255 Drilling crew begin mixing bentonite grout for the two wells MW52/53.

Jeff said he is going to develop MW52/53 tomorrow morning.

1310 off site.

end

12-26-96

0800 on site Matt Brown is also

on site  
 weather 10°F, snowing

We are going to sample the  
 four new wells MW52/53 and  
 MW54/55 today. Montgomery  
 Watson personnel not on site  
 yet.

0900 Site waiting for sampling  
 personnel. Showed Matt the  
 well locations

0930 Galileo Street civil asked  
 about lab assignment.

1030 left a message for the West  
 regarding drain material to  
 store. Arrive early for

1130 Sampling personnel not on site  
 yet. Still searching on site.

Increased with regarding surface  
 water sampling. I mentioned  
 to him that the pond was

being drained to the stream  
 which is seen during my  
 site walk through with Matt.

12-21-96

120 Road was being driven

(looking north)

1210 Borehole for cleaner

1300 Borehole to the site. Sampling

personnel setting up

1400 Set up to sample at MW55

#21 Pumping at MW55 (looking

South)

Pumping at -250 ft. MW55

1435 Sample at MW55. Will collect

duplicate here. (This was the deep

samples are being made)

501 and 501

Tag Nos.

5. NO. 972802D01

722802501

V045 5-16458.87

5-16458.87

SV045 5-16457.8

5-16458.8

PC84/EST 5-16457.9

5-16458.3

METRES 5-16458.0

5-16481.8

CN 5-16458.1

5-16457.7

5. NO. 501

501

LOC. NES-QW01-101

ACS-GW01-001

~~Joshua Eupen~~  
12-26-96

( )

10

1535 Collect split sample at  
MW 54 (shallow well)

S NO 972B02S02

Sta. NO. S02

LOC. ACS-LWDZ-DD1

Tag NOS.

VDAS 5-164592, 93

SUDAS 5-164594

PCBS/PEST 5-164595

METALS 5-164596

CN 5-164597

1615 Collect rinseate sample at  
the trailer.

S. NO. 972B02R01

Sta. NO. R01

LOC. NO. ACS-RB01-201

Tag NOS.

VDAS 5-164591, 98

SUDAS 5-164599

PCBS/PEST 5-164600

Metals 5-164608

CN 5-164609

1745 Collect a Trip Blank TB01  
Tag NO. 5-164589, 90

~~Joshua Eupen~~  
12-26-96

11

1815 Head to Airborne office for  
cable shipment.

2045 Complete shipment activities.

end

Joshua Lupani  
12-27-96

12

0800 On site. Matt Booker also on site.

Weather Cold, cloudy, 25°F

Today we will sample MWS2/S3 and surface water from the landfill outfall.

0900 Set up for sampling at MWS2<sup>3</sup>. AKR (Deep well). According to Jeff, MWS2 is a shallow well within the lower aquifer.

1000 S.NO. SD3

Tag NOS.

VOAS 5-164990, 91  
SVDA5 5-164992  
PEST/PCBS 5-164993  
METALS 5-164904  
CN 5-164994

1045  
SRM  
3-11-97

MS/MSD Tag NOS.

VOAS 5-164995, 96 5-164815, 16  
SVDA5 5-164817, 5-164564  
PEST/PCBS 5-164565, 66  
Metals 5-164567, 68  
CN 5-164569, 70

Joshua Lupani  
12-27-96

13

1045 S.NO. SD4 Tag NOS.

VOAS 5-164571, 72  
SVDA5 5-164573  
PEST/PCBS 5-164574 (Shallow well)  
METALS 5-164575  
CN 5-164576

MWS2<sup>3</sup>

AKR

1345 Collect surface water sample at AKR or near the landfill outfall.

S.NO. SD5

Tag NOS.

VOAS 5-164612, 13  
SVDA5 5-164614  
PEST/PCBS 5-164615  
METALS 5-164616  
CN 5-164617

MS/MSD Tag NOS

VOAS 5-164618, 21  
SVDA5 5-164622, 23  
PEST/PCBS 5-164624, 25  
METALS 5-164626, 27  
CN 5-164628, 29

Jonok Dupani  
12-27-96

14

Collect a duplicate surface-  
water sample 972B02 DUS

Tag NDS.

VDAS 5-164630, 951

SVDAS 5-164952

PEST/PCBS 5-164953

METALS 5-164954

CN 5-164955

1400 Collect two Trip Blanks  
using HPLC water

TB02 Tag NDS. 5-164582, 851

TB03 Tag NDS. 5-164606, 609

Surface water sample was collect  
approx 5-6 feet directly north  
of the outfall. One pump was  
on at the time of sampling.

#22, #23 sampling at MWS3

#24, #25 sampling at MWS2

1500 Complete sample packing for  
CRL samples. Head to CRL in  
downtown.

Jonok Dupani  
12-27-96

15

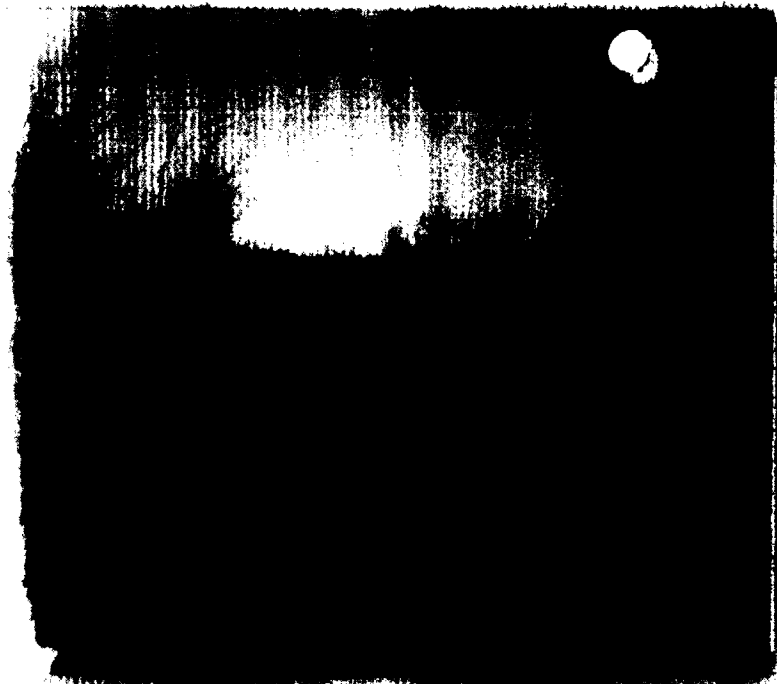
1605 Drop off samples at CRL

1800 Complete sample chain of custody  
for CRL samples

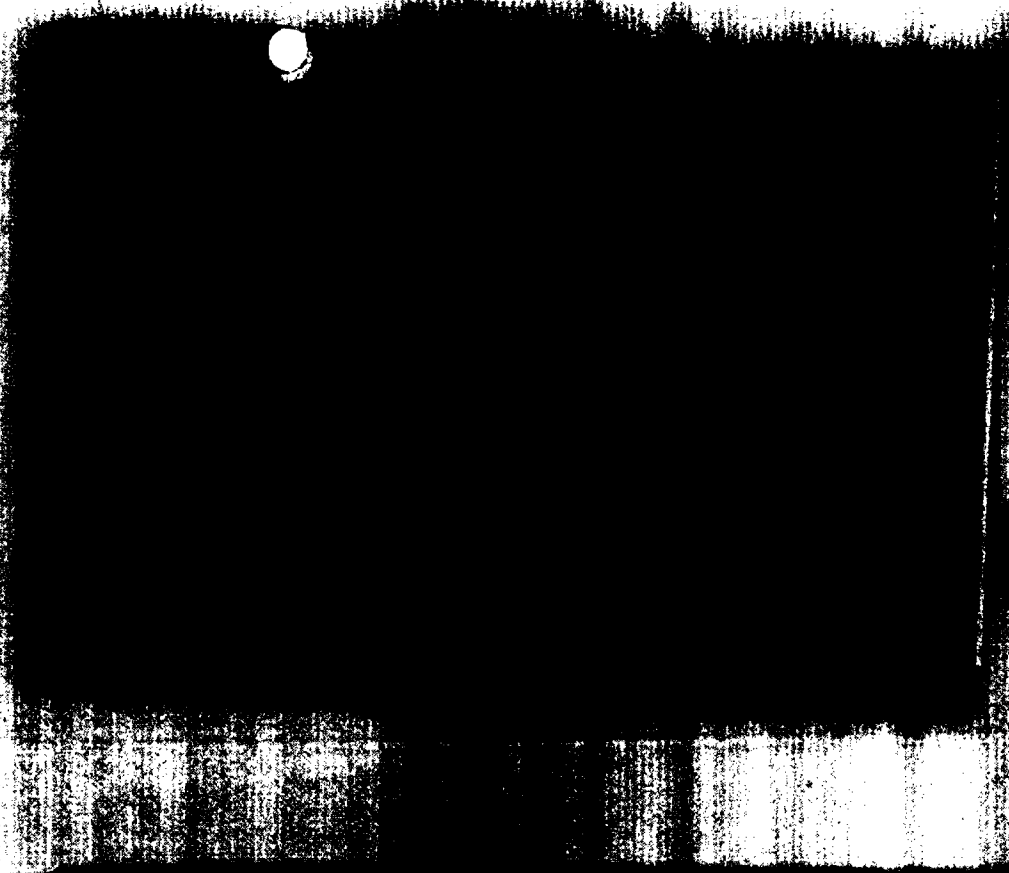
1715 Reach Airborne facility.

1730 Trip off CRL samples.

end



Site: American Chemical Services, Inc. RD/ERA  
Proj. #: 71670.600  
Roll: 1 Photo #: 1  
Date: 11-26-96 Time: 1130  
Photographer: Ashok Rupani  
Description: Facing west. Part of the wetlands area cleared for the  
installation of effluent discharge piping.



Site: American Chemical Services, Inc. RD/ERA  
Proj. #: 71670.600  
Roll: 1 Photo#: 2  
Date: 11-26-96 Time: 1345  
Photographer: Ashok Rupani  
Description: Facing north. HTI field personnel drilling at location  
SB-1 along the PGCS extraction trench alignment.

Site: American Chemical Services, Inc. RD/ERA

Proj. #: 71670.600

Roll: 1 Photo #: 3

Date: 11-26-96 Time: 1420

Photographer: Ashok Rupani

Description: Facing north. HTI field personnel drilling at location  
SB-3 along the PGCS extraction trench alignment.

Site: American Chemical Services, Inc. RD/ERA

Proj. #: 71670.600

Roll: 1 Photo #: 4

Date: 11-26-96 Time: 1450

Photographer: Ashok Rupani

Description: Facing west. HTI field personnel conducting air  
monitoring with an HNu at location SB-5.

Site: American Chemical Services, Inc. RD/ERA

Proj. #: 71670.600

Roll: 1

Date: 11-26-96

Photographer:

Description:

Photo #: 5

Time: 1540

Ashok Rupani

Facing west. HTI field personnel drilling at location  
SB-8 along the PGCS extraction trench alignment.

Site: American Chemical Services, Inc. RD/ERA

Proj. #: 71670.600

Roll: 1

Date: 12-16-96

Photographer:

Description:

Photo #: 6

Time: 1125

Ashok Rupani

Facing northeast. Conducting split-spoon sampling at  
location MW-55 to confirm top of upper confining layer.

Site: American Chemical Services, Inc. RD/ERA

Proj. #: 71670.600

Roll: 1 Photo #: 7

Date: 12-16-96 Time: 1350

Photographer: Ashok Rupani

Description: Facing east. Grouting the annular space between the 6-inch outer casing and the hollow-stem augers at location MW-55.

Site: American Chemical Services, Inc. RD/ERA

Proj. #: 71670.600

Roll: 1 Photo #: 8

Date: 12-16-96 Time: 1505

Photographer: Ashok Rupani

Description: Facing southeast. Setting the 6-inch outer casing at location MW-54.

Site: American Chemical Services, Inc. RD/ERA

Proj. #: 71670.600

Roll: 1 Photo #: 9

Date: 12-17-96 Time: 0930

Photographer: Ashok Rupani

Description: Facing east. Drilling at location MW-55 using wash rotary technique.

Site: American Chemical Services, Inc. RD/ERA

Proj. #: 71670.600

Roll: 1 Photo #: 10

Date: 12-17-96 Time: 1335

Photographer: Ashok Rupani

Description: Facing east. Setting the temporary 4-inch casing at location MW-55.

Site: American Chemical Services, Inc. RD/ERA

Proj. #: 71670.600

Roll: 1 Photo #: 11

Date: 12-17-96 Time: 1515

Photographer: Ashok Rupani

Description: Facing east-southeast. Preparing light drilling mud for use  
at depths below 50 feet at location MW-55.

Site: American Chemical Services, Inc. RD/ERA

Proj. #: 71670.600

Roll: 1 Photo #: 12

Date: 12-18-96 Time: 1350

Photographer: Ashok Rupani

Description: Facing east. Grouting the annular space between the 6-  
inch outer casing and the hollow-stem augers at location  
MW-52.



Site: American Chemical Services, Inc. RD/ERA

Proj. #: 71670.600

Roll: 1 Photo #: 13

Date: 12-19-96 Time: 1625

Photographer: Ashok Rupani

Description: Facing east. Installing the stainless steel well casing at location MW-55.



Site: American Chemical Services, Inc. RD/ERA

Proj. #: 71670.600

Roll: 1 Photo #: 14

Date: 12-20-96 Time: 1515

Photographer: Ashok Rupani

Description: Facing east-northeast. Drilling at location MW-54 within the lower aquifer inside the temporary 4-inch casing.

Site: American Chemical Services, Inc. RD/ERA

Proj. #: 71670.600

Roll: 1 Photo #: 15

Date: 12-21-96 Time: 1325

Photographer: Ashok Rupani

Description: Facing north-northwest. Drilling at location MW-53 using wash rotary technique.

Site: American Chemical Services, Inc. RD/ERA

Proj. #: 71670.600

Roll: 1 Photo #: 16

Date: 12-21-96 Time: 1545

Photographer: Ashok Rupani

Description: Facing east-southeast. Placing filter pack at location MW-53.



Site: American Chemical Services, Inc. RD/ERA

Proj. #: 71670.600

Roll: 1 Photo #: 17

Date: 12-22-96 Time: 1250

Photographer: Ashok Rupani

Description: Facing northeast. Setting up to develop monitoring well MW-55.



Site: American Chemical Services, Inc. RD/ERA

Proj. #: 71670.600

Roll: 1 Photo #: 18

Date: 12-26-96 Time: 1400

Photographer: Ashok Rupani

Description: Facing south. Purging monitoring well MW-55. Flow rate and field parameters were measured and recorded. BVSPC collected split samples from this well.

Site: American Chemical Services, Inc. RD/ERA

Proj. #: 71670.600

Roll: 1 Photo #: 19

Date: 12-27-96 Time: 1000

Photographer: Ashok Rupani

Description: Facing north. Purging monitoring well MW-53. Flow rate and field parameters were measured and recorded.

Site: American Chemical Services, Inc. RD/ERA

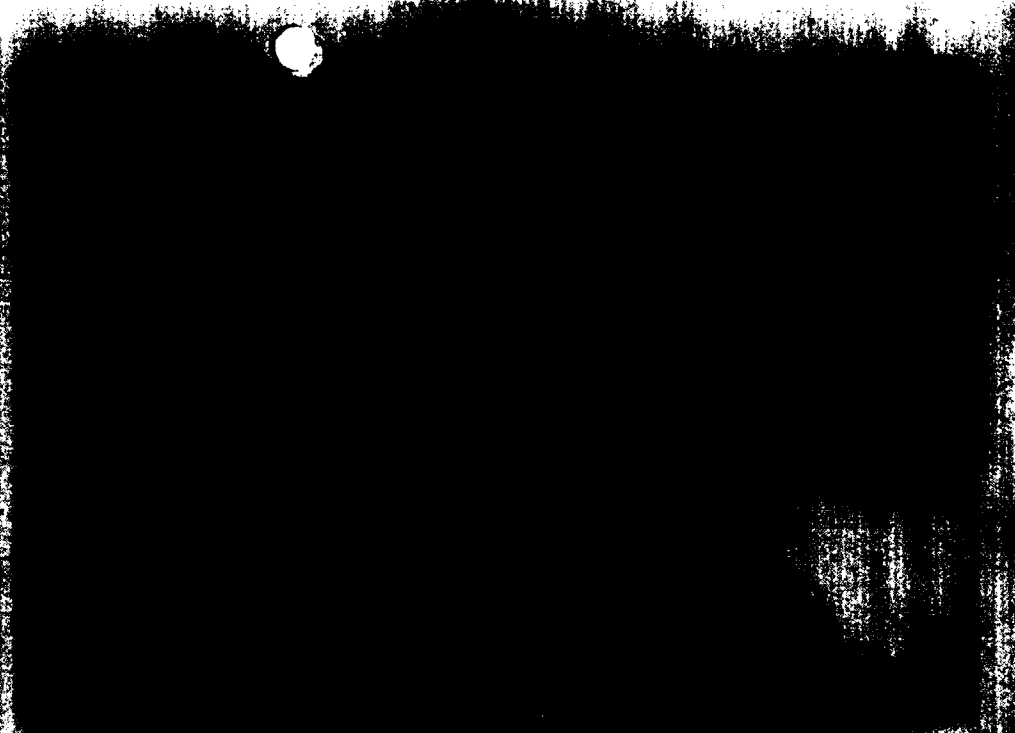
Proj. #: 71670.600

Roll: 1 Photo #: 20

Date: 12-27-96 Time: 1020

Photographer: Ashok Rupani

Description: Facing west. Sampling monitoring well MW-53. BVSPC collected split samples from this well.



Site: American Chemical Services, Inc. RD/ERA  
Proj. #: 71670.600

Roll: 1 Photo #: 21  
Date: 12-27-96 Time: 1045

Photographer: Ashok Rupani

Description: Facing east. Purging monitoring well MW-52. Flow rate and field parameters were measured and recorded.

Site: American Chemical Services, Inc. RD/ERA  
Proj. #: 71670.600

Roll: 1 Photo #: 22  
Date: 12-27-96 Time: 1105

Photographer: Ashok Rupani

Description: Facing west. Sampling monitoring well MW-52. BVSPC collected split samples from this well.

Site: American Chemical Services, Inc. RD/ERA

Proj. #: 71670.600

Roll: 1 Photo #: 23

Date: 12-27-96 Time: 1345

Photographer: Ashok Rupani

Description: Facing south. Water from the Griffith Landfill borrow pit is being pumped into the stream located just north of the pit and immediately south of the railroad tracks. BVSPC personnel collected water sample at approximately six feet in front of this outfall.

921201 58+00 NNDNH-1600 513  
(22)  
12/27/96  
513 #25